



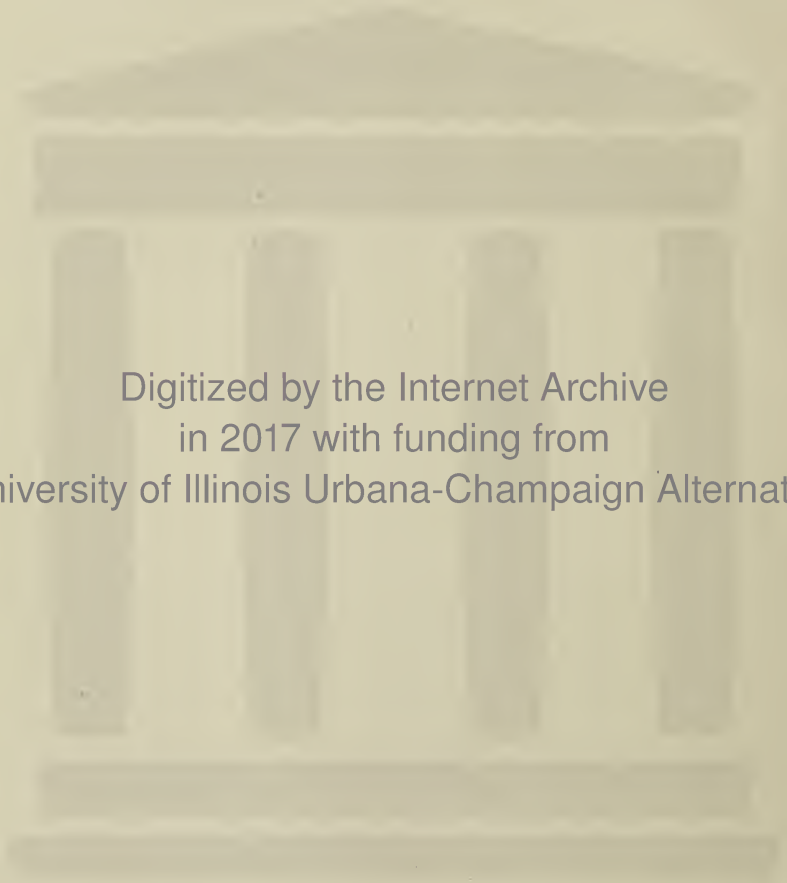
RECORD OF THE MINES
OF
SOUTH AUSTRALIA:
THE WADNAMINGA GOLDFIELD,

WITH
REPORT AND PLANS.

*Prepared under authority of the Hon. Laurence O'Loughlin, M.P.,
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THE WADNAMINGA GOLDFIELD.

This goldfield was discovered in the year 1888, a quartz vein rich in gold being found by Messrs. McDonald, Beveridge, and Jones, who named their claim the Eiffel Tower. In the same year the Victoria Tower, Oulnina Tower, Countess of Jersey, and other lodes on the same line were discovered.

A separate line of gold-bearing lodes was discovered in September, 1889, by Messrs. Cross and McLeay. Their claim was named the Birthday, and was afterwards known as the Milo. The Great Eastern, on the same line, was discovered in the same year by Messrs. Holmes and Haycock, and the Virginia in the following year by Mr. H. Mills.

Since 1889, on the Eiffel Tower group of lodes, various claims have been worked, more or less intermittently, with not altogether satisfactory results, although occasionally stone rich in gold has been obtained. On the Birthday and Great Eastern and Milo group of lodes more systematic work has been done, and payable results obtained from the Milo or Birthday, Great Eastern, and Virginia.

The information given below relating to the present condition of these mines is derived from actual inspection and survey, so far as the workings were accessible during the latter part of 1897, while their past history has been obtained from official and other records, and verbally from original prospectors, who still reside in the district.

THE EIFFEL TOWER AND VICTORIA TOWER GROUP OF LODES.

This group of auriferous veins extends in a west-south-westerly direction for a distance of three miles, along a low range having a general elevation of 100ft. to 150ft. above the surrounding plain country. This range is composed of argillaceous, micaceous, and calcareous slates; micaceous, argillaceous, and calcareous sandstones; micaceous limestones and limestone; having a general strike of west 10° to 15° south, and a steep dip northward. Sometimes the strata are vertical, and in many places they form anticlinal folds.

The lodes or veins consist of quartz, brown iron ore, hematite, and gossan; they have a variable strike, and the outcrop is sometimes curved round in the form of a horseshoe; the general underlie is south and south-easterly, at angles from 10° to 49° . The chief peculiarities common to these quartz lodes are—the low underlie, or angle at which they dip (this angle averages from 10° and 15° to 30° , and seldom exceeds 45°); the direction of the underlie (this is south or south-easterly, with one exception, that of the Oulnina Tower, which is north-westerly). The walls are generally 2ft. to 4ft. apart, and include between them, besides the quartz, sections of country-rock. The quartz and other veinstones sometimes occupy the footwall, and at others the hanging wall, and again are found on both walls, or filling up the whole space between them. One of these walls is generally smoother and better defined than the other. The lodes cut across the strata as a rule, and are not interbedded, except when they occupy the crown of an anticlinal. The principal vein-stone is quartz, generally of the white opaque variety, also tabular and laminated; brown iron ore, hematite, gossan, calcespar, and spathic iron are also often present.

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Travertine limestone generally occurs, coating the different veinstones and the country-rock along the vein outcrops, but is found to die out as they are followed down from the surface.

INDICATOR VEINS.

In connection with the quartz lodes there are small subsidiary veins, sometimes consisting of quartz, gossan, and ironstone, at others merely fissures, cutting the lodes at angles approaching right angles. These secondary veins or fissures are locally known as "indicators," because they are believed to indicate the presence of gold. The fact remains that, in many cases where the lodes are cut by them, rich pockets of gold have been found to occur. So far as I have observed, these indicators are in the hanging wall only, and do not pass through the footwall; I have, however, not had an opportunity of observing them at the time work was being done, consequently there is an uncertainty on this point. If they cut through the lode completely, they must have been formed subsequently to the deposition of the lode; if they only penetrate one wall, they have probably been formed simultaneously with the fissure in which the lode matter was deposited.

The gold occurs in the solid quartz, and in the lamination of the quartz; in ironstone and gossan; and has also been observed in the travertine limestone deposit, in lumps or nuggety pieces, flat crystalline plates, and fine particles. Pyrites is present in the veins near the surface, and will doubtless become more plentiful below water-level, and replace the iron oxides. Galena and carbonate of lead ore are disseminated through the veinstone of all the lodes to a greater or less extent, and carbonate and other ores of copper occasionally occur.

CARVER'S CLAIMS (*Gold Sections 153, 221, Map*).

Two shafts, one of which is 50ft. deep, have been sunk on an irregular vein formation of small size, dipping 30° south-easterly. No permanent body of veinstone has been disclosed. Specimens rich in gold are said to have been obtained and rich stone crushed from this place. Alluvial gold has been obtained about 20yds. south of the principal shaft, in shallow ground. In the same vicinity a quartz lode, with iron oxides and carbonate of iron, 1ft. to 4in. in thickness, strikes W. 10° S., and underlies 30° to 45° southerly. The bedrocks form an anticlinal; they strike W. 15° S. An indicator vein intersects this reef, along the course of which gold has been obtained in the surface detritus. There are other short vein outcrops in the neighborhood. More prospecting is advisable in this locality.

OULNINA TOWERS (*Gold Section 215, Map; Plans Nos. 2 and 4*).

This quartz outcrop extends from the main shaft S. 20° W. for 124ft., then S. 17° E. for 110ft., then S.W. for 140ft.—total length, 374ft. It has a thickness in places of from 2ft. to 5ft. The main shaft has been sunk 188ft. on an average incline of 16° westerly; at the bottom the lode splits into two veins, varying in thickness from 1in. to 8in.; in No. 2 shaft it is 2ft. thick. This is a strong outcrop, and the quartz has a favorable appearance for gold. No stoping has been done except along and near the surface.

This claim was first taken up in 1889; 30ozs. of gold were obtained from about 1 ton of stone. It was worked intermittently until 1892, about which time a parcel of 12 tons, crushed in Melbourne, yielded 12dwts. of gold per ton (T. Smith).

GOLD SECTIONS 156, 157, 236, *Map*.

On these sections, cuttings and shallow shafts have disclosed quartz reefs and small veins interstratified in the anticlinal folds of the strata and intersecting them vertically and in an inclined position, dipping south. The veinstone is favorable to the occurrence of gold. A gully, passing through portions of sections 156 and 236, has been worked for alluvial gold for a short distance along its course.

VICTORIA TOWER (*Gold Sections 206, 243, 244, Map; Plans Nos. 2 and 5*).

The outcrop extends along a curved line for a distance of 800ft., striking N. 60° W. 160ft., N. 40° W. 170ft., N. 60° W. 200ft., N. 70° W. 80ft., and N. 5° W. for 200ft., where it thins out altogether. The main shaft has reached water at 335ft. on the incline, at which level the water now stands. The shaft is said to have a total depth on the incline of 445ft., the lode containing much pyrites. Indicator veins traverse the lode, striking in a north-north-westerly direction; where these intersect it the richest specimens of coarse gold are said to have been found. The main indicator vein here consists of ferruginous quartz with pyrites, it is from $\frac{1}{2}$ in. to 1in. in thickness, and cuts through the hanging wall, but does not appear to cut the footwall. The walls of the lode are fairly well defined, and cut through the bedding of the country rocks. The quartz is tabular, laminated, and cellular, and contains pyrites and galena, and has a highly favorable appearance for gold. Along the outcrop in the surface loam and clay good prospects of loose gold can be obtained by washing or dryblowing, and to the north-west of the main shaft the surface deposits have been and are still being worked for gold. Rich specimens of gold have recently been found in quartz, on the southern portion of the lode outcrop.

By an inspection of plan No. 5 the manner in which the mine has been opened up can be studied; judging from the numerous drives and winzes and the small amount of stoping done, it appears that the work has chiefly been confined to searching for and working out patches of rich auriferous stone, and that no systematic attempt has been made to open up the mine and obtain average stone for crushing. The lode is large and persistent, and has been followed down on the incline for 445ft. It is of unusual average thickness, and has been proved, where tried at various points, to contain rich specimens of gold. I am of opinion that, if opened up properly, and prospected systematically on a larger scale (the system hitherto adopted of fossicking for specimens being abandoned), quantities of auriferous stone would be found which could be treated in bulk. It is worth noting, with regard to the future working of this mine, that vertical shafts would be much cheaper and more economical than inclined shafts. As an example—the main shaft has been sunk 335ft. to water level; a vertical shaft to reach the same point would only have to be sunk about 155ft. from the surface.

The mine was worked for five years, from 1889 to 1894, by a Victorian company, by which the work shown on the plans appended was carried out. A dry-crushing plant was erected during that time, and 250 tons are stated to have been treated with a result of 7dwts. per ton. Since 1894 little work has been done.

The mine is now held by Messrs. Heming and Holdaway. Five tons 15cwts. raised by them, and treated at the Petersburg Government Cyanide Works in March, 1898, yielded 4ozs. 19dwts. of gold, valued at £14 13s. 6d.

Mr. F. D. Johnson, who at one time managed this mine, has furnished me with the following returns of gold obtained:—

Date.	Cwts.	Ozs.	Dwts.	Grs.
1890.....	15	yielded	128	13 10
1891.....	2	“	60	0 0
1891.....	10	“	5	0 0

A specimen of gold in quartz weighing 8oz. 14dwts. was found on the surface.

Mr. Jessop states that 10 tons treated at Footscray, Victoria, yielded 52ozs. of gold. Twenty tons treated at the Countess of Jersey battery, Wadnaminga, yielded 9ozs. 18dwts., and 3 tons at the same battery yielded 11ozs. 6dwts. of gold.

Three average samples of coarse tailings remaining from the treatment by the dry crushing process, taken by me, yielded gold and silver as follows:—

No.	Gold, a trace	per ton;	silver, a trace	per ton.
No. 1	4dwts.	1gr.	2dwts.	11grs.
No. 2	4dwts.	23grs.	3dwts.	5grs.

COUNTRESS OF JERSEY (*Gold Section 245, Map; Plans Nos. 2 and 6*).

There are two lode outcrops here. The main outcrop strikes W. 25° S. for a distance of 460ft.; it varies in thickness from a few inches to 1ft. The main shaft has been sunk on the incline to 306ft., and opened up by levels along the lode at 214ft., and at the bottom, as shown on the plan. The average inclination is 29° south. The thickness of the lode varies from 3in. to 3ft. in the 214ft. level, and from 6in. to 9in. in the bottom level. Very little stoping has been done. The richest specimens of gold are said to have been obtained near an indicator vein striking N. 20° W. across the lode on the western side of the shaft, and along two indicators on the eastern side at a place where there is a junction of two quartz veins. No gold is said to have been found anywhere but in the vicinity of these indicators. The lode is small, and the quartz of which it is chiefly composed is laminated, and contains pyrites. The walls are well defined, and the veinstone occurs sometimes on both walls.

The lesser outcrop extends about 60ft. along the surface. Two inclined shafts have been sunk on the lode to distances of 100ft. and 210ft. respectively, and a little stoping has been done in the deeper one. The 100ft. shaft follows an indicator dipping 80° north-easterly.

In addition to these outcrops a strong cross vein or indicator traverses the top of the hill in a north and south direction for 200ft. at right angles to the strike of the main lode, which it cuts at a point about 66ft. west of the main shaft. This vein, which is composed of quartz, iron oxides, and calcareous and siliceous veinstone, dips east 50° . Shallow shafts have been sunk along it.

This mine, like the Victoria Towers, has been opened up to a considerable depth in searching for gold specimens in connection with the indicator veins traversing the lode. The smallness of the lode is a drawback, at the same time further prospecting by extending the deeper levels or sinking the shaft is advisable. The workings are in good order, and in a fit condition to be restarted at any time.

The lode was first pegged out in 1889, and was worked till the end of 1890. In 1891 it was taken up by a Victorian company, and was worked by it till 1894. A battery was erected at a distance of two miles from the mine and about 300 tons of stone treated—there is no record of the return of gold from this parcel. Very little is known regarding the yield of gold. In 1891 two tons crushed returned 16ozs. and 11ozs. respectively (F. D. Johnson). Rich specimens of gold were found at various times, and it is known that a considerable quantity was obtained by dollying.

THE GOLDEN TOWER (*Gold Section 247, Map; Plans Nos. 2 and 7*).

Three shafts have been sunk on the lode passing through this claim. It strikes east and west, and outcrops for 440ft. on this bearing, and dips south at an average angle of 45° .

The main shaft is 109ft. on the incline, which is 44° south in the upper portion and increases to 48° lower down. The thickness of quartz is about 6in. near the surface and increases to 1ft. 6in. down the shaft. The walls are well-defined and are from 3ft. to 4ft. apart. The quartz is laminated, and contains galena, pyrites, and gold. A cross vein or indicator intersects the lode in this shaft, passing through it in a north-north-westerly direction.

No. 2 shaft is 223ft. west of the main shaft; in it the lode has been followed down 32ft. on the underlie, which varies from 49° to 42° south. The lode is 1ft. 6in. thick at the surface and 3in. thick at the bottom. The quartz is laminated and contains galena and green carbonate of copper. Gold is visible in the slate casing alongside the lode, in the quartz, and in the travertine limestone which is associated with the veinstone at the surface and for some distance down the shaft.

No. 3 shaft is 108ft. east of the main shaft. It is sunk on the lode to a depth of 41ft. For 30ft. the dip is 51° south, and for the next 10ft. 29° south. The lode is 1ft. 6in. thick in the bottom and 3in. to 6in. at the surface.

The walls of the lode are well defined and regular, and indicate that the lode will continue down to considerable depths.

The character of the quartz, even where no gold is visible in it, is favorable to the occurrence of gold. Very rich specimens of gold have been obtained from the outcrop, and there is every inducement to sink on the lode, and to open it up by levels, in order that the shoots of gold indicated by the specimens obtained from the present shafts may be cut.

TAYLOR'S CLAIM (*Gold Section 249, Map*).

Several shafts have been sunk on a quartz outcrop, extending for a distance of 370ft. It strikes W. 30° S., and has an average dip of 45° . The thickness of the vein varies from 3in. to 1ft. The deepest shaft is about 30ft. The quartz is laminated and glassy, and is associated with a calcareous and slaty formation. The footwall is well-defined.

THE GOLDEN RECORD (*Gold Section 262, Map; Plans Nos. 2 and 8*).

This quartz lode is a continuation of the vein worked in the claim known as the Eiffel Tower, where gold was first discovered on the Wadnaminga field. The lode strikes north-easterly and south-westerly, and dips from 15° to 24° south-easterly.

A vertical shaft 15ft. deep has been sunk to the lode, which has then been worked by winzes and drives for a distance of 90ft. The thickness of veinstone, which consists of laminated and crystallised quartz, with pyrites, galena, and iron oxides, varies from 3in. to 18in. Extraordinarily rich specimens of gold have been found here, and the amount dollied by the present holders is stated to be 60ozs. A parcel of stone treated at Kapunda is reported to have yielded 1oz. 19dwts. per ton, but no authentic return is obtainable. Besides these workings the original Eiffel Tower Syndicate and the Earl of Jersey Syndicate had previously sunk shafts on the inclination of this lode to the south-westward, and a vertical shaft 110ft. to cut it. No information as to the result of these operations is available.

The lode is of small size; it contains, however, rich shoots of gold, which should be followed down and prospected at deeper levels.

THE GREAT EASTERN, BIRTHDAY (NOW "NEW MILO"), AND
VIRGINIA GROUP OF LODES.

The nature, structure, and composition of the lodes in this group are very similar to those of the Eiffel Tower and Victoria Tower group. The lodes have usually two well-defined walls, varying in width apart from 3ft. to 5ft., between which walls is included a section of cleaved and jointed country-rock. The veinstone occurs in some cases on the hanging wall, in others on the footwall, and occasionally divides into two or more veins. The inclination or dip averages 25° southerly. From the length of outcrop and the good definition of the walls it is to be inferred that the lodes themselves will continue downwards to considerable depths. The rock formations containing the lodes consist of clayslates, calcareous clayslates, micaceous slates and sandstone, micaceous and argillaceous limestone, and massive limestone; striking from east and west to west 20° south. The country-rock is often penetrated by siliceous and calcareous bars or cross veins, more or less parallel to one another, and running in some places with the strata, at the other places across them. These show frequently at the surface, and are also occasionally seen in connection with the lode below. They appear to be of a similar nature to the "indicator veins" referred to in connection with the Eiffel and Victoria Towers group of lodes, and probably have had some influence on the occurrence of gold in the lodes.

GOLD SECTION 226, *Map; Plan 3*.

On this section a quartz lode extends for a distance of 300ft. It strikes W. 10° S., and dips southerly at an angle of about 28° . The thickness varies from 6in. to 1ft. The workings consist of several shallow pits and a shaft 30ft. deep. There is no record of any stone having been treated from this section.

GREAT EASTERN (*Gold Section 150, Map; Plans Nos. 3 and 10.*)

This quartz lode is a continuation westward of that in section 226, and has been opened up at intervals right across the section, a distance of 800ft. The thickness varies from 3in. to 1ft.; it contracts occasionally to a mere fissure. Three inclined shafts have been sunk. No. 1 is 170ft. At 42ft. down the shaft a level has been driven eastward for 93ft., from which the lode has been stoped to the surface. No. 2 shaft is 90ft. on the incline, and the lode has been stoped out eastward above a level 66ft. long and westward above and below the same level for 114ft. No. 3 shaft is 50ft. on the incline. The veinstone consists of quartz and iron oxides, and contains traces of galena; it is of small size but has been proved in places to be rich in gold.

It was taken up in 1889 by Messrs. Holmes and Haycock, who held it for four years when it became the property of the New Milo G.M. Co. Ten tons treated at the Virginia battery yielded 1oz. 7dwts. of gold per ton (T. Smith).

January, 1898.—Six tons treated at the Government Cyanide Works, Petersburg, yielded 10ozs. 16dwts. 9grs. of gold, value £36 10s. February 1st, 1898.—Eleven tons yielded 17ozs. 9dwts. 3grs., value £61 15s. 6d. March, 1898.—Four tons 16cwts. yielded 3ozs. 5dwts. 9grs. of gold, value £11 9s. 11d.

NEW MILO (*Gold Sections 225, 238, 151, 209, 212, 257; Plans Nos. 3 and 11.*)

The eastern lode outcrop extends 330ft. east and west, and varies in thickness from 2in. to 6in. It dips south at a low angle. Two shafts of 30ft. each have been sunk on the incline. The lode in the bottom of the eastern shaft is 1ft. thick, and consists of quartz, with pyrites and iron oxides. On the western end the lode is split into two veins near the surface, which will apparently join below the bottom of the shaft. There are no records of any stone treated or gold obtained.

The western lode outcrop extends 370ft. from east to west; of this 280ft. has been stoped along the surface. The general dip or inclination is 20° south. There are three shafts, known as the Water Shaft, Nutman's (or the New) Shaft, and the Golden Point Shaft. The Water Shaft is 295ft. on the incline to water level. It is stated to be 100ft. deeper, but, on account of the water, the correctness or otherwise of this statement could not be ascertained. From the surface the lode has been stoped down to 94ft. on both sides of the shaft, and below 200ft. the stopes extend eastward about 130ft. in an irregularly shaped patch. This stope is said to have yielded stone very rich in gold. Two samples of quartz and pyrites taken by me at the time of examination assayed—gold 3ozs. 6dwts. 23grs., silver 15dwts. 23grs.; and gold 25ozs. 7dwts. 23grs., silver 10ozs. 21grs., respectively. The lode formation bounding these stopes in some places comprises three or four separate veins, consisting of quartz with pyrites and galena.

Nutman's (or the New) Shaft is 495ft. on the incline, but has not reached water level. At the bottom a level has been driven westerly for 81ft. on the lode, which averages about 6in. in thickness, and consists of quartz, with pyrites, galena, and iron oxides.

Golden Point Shaft.

This shaft was sunk prior to Nutman's, which crosses it at an acute angle, and is connected with it by levels below the point of intersection. The lode has been stoped between these two shafts and westward of Nutman's Shaft.

The shoot of auriferous stone dips south-westerly from the Water Shaft, in which direction it has been followed down. The appended plan of the workings explains the way in which the mine has been worked and shows that the lode was followed down and worked out by levels and stopes from these shafts, wherever payable ore was disclosed, and that little exploratory work was done, the levels and stopes being abandoned as soon as the lode became small or too poor to pay. It is highly probable that other shoots of payable stone will be disclosed by deeper sinking and the extension of levels. The use of vertical shafts in the future working of this mine will be found more advantageous and economical than inclined shafts, both for

working and draining purposes. The extension southwards of the lode can also be best prospected for by vertical shafts. This depth will be, owing to the low inclination of the latter, comparatively small.

This lode was discovered in 1889 by Messrs. Cross and McLeay, and was worked for three years by a co-operative party of five men; their claim was known as the Golden Point. In 1892 this claim and the Birthday claim, which comprised the ground around what is now the Water Shaft, were floated into a company called the New Milo. The mine was worked more or less continuously till August, 1897, when it was let on tribute. It has recently again changed hands.

Gold Returns (Official).

Date.	Ore Treated.			Gold Obtained.				
	Tons.	Cwts.	Qrs.	Ozs.	Dwts.	Grs.		
May, 1892 ..	15	0	0	..	12	10	0	Smelted at Wallaroo.
1893	12	3	0	..	83	0	0	“
1893 to 1897..	9,460	0	0	..	4,240	12	0	By New Milo Battery.
1893 to 1897..	tailings			..	6,138	12	0	By cyanide process at New Milo Works.

The average value of bullion produced has been £2 18s. 6d. per ounce.

VIRGINIA (Gold Sections 207, 208, 259, 268, Map; Plans 3 and 12).

The outcrop of this lode has been worked out for a distance of 980ft. It strikes west-south-westerly, and dips at low angles southward. Owing to the mine containing water to within 60ft., vertically from the surface, it was impossible to examine anything more than the upper levels and stopes. Judging by these the thickness of veinstone appears to have been very irregular, varying from a few inches to 2ft.; it consisted of quartz, with iron pyrites, galena, and carbonate of lead.

The Virginia was discovered in 1890 by H. Mills. In the latter end of 1891 a company was formed. A quantity of ore was treated at Wallaroo for a return of from 2ozs. to 2½ozs. of gold to the ton, from the proceeds of which a battery was bought and working expenses paid for twelve months. Mining operations were carried on till 1895, since which date the mine has been closed.

Gold Returns (Official).

Date.	Ore Treated.			Gold Obtained.		
	Tons.	Cwts.	Qrs.	Ozs.	Dwts.	Grs.
January, 1892	28	5	0	..	95	0 0
February, 1892	20	0	0	..	77	10 0
March, 1892	88	0	0	..	276	0 0
April, 1892	91	0	0	..	219	0 0
May, 1892	119	0	0	..	356	0 0
June, 1892	107	0	0	..	268	0 0
July, 1892	92	0	0	..	199	0 0
June, 1893 (six months' return)	923	0	0	..	629	2 5
August, 1894 (six months' return)	1,284	0	0	..	1,069	0 0

No further returns are obtainable.

MISCELLANEOUS MINES.

NORTH AND SOUTH (Gold Section 152, Map; Plan No. 9).

This quartz lode extends N. 13° W. for 300ft. It dips westerly 25°, and varies in thickness along the outcrop from a few inches up to 2ft. The main shaft is 166ft. on the inclination of the lode; from it the lode has been stoped out for a short distance, as shown on the plan. No. 2, also an inclined shaft, is 64ft., and the lode is 15in. thick in the bottom. No. 3 shaft is 103ft. on an inclination of 28°, and has a quartz

vein from 3in. to 9in. thick in the bottom. This is a small and intermittent lode, making in some places and thinning out to nothing at others. No. 4 shaft has been sunk 20ft. at an angle of 58° southerly on an east and west quartz vein about 9in. in thickness. The footwall is well defined.

The lode was discovered in 1891 by Messrs. H. Mills and W. Holmes. About 200 tons of ore were treated at the Virginia battery, but no returns are available.

Twenty tons treated at the Milo battery averaged 1oz. of gold per ton (T. Smith). The mine was worked at one time by the New Milo Gold Mining Company, and it is reported that rich gold specimens were obtained.

THE FRENCHMAN LODGE (*Gold Sections 154, 155, Map*).

The main outcrop can be traced on a strike of E. 30° N., about 560ft.; the average thickness is about 1ft., but at one point it attains a thickness of 10ft. The main shaft follows the lode 70ft., at an angle of 60° northward. Sufficient work has not been done to show the general thickness of the lode. No. 2 shaft, which is partly vertical and afterwards inclined northward, has been sunk on a large quartz and other lode formation, 10ft. wide. There appear to be two or three separate veins here. The workings were so unsafe that a detailed examination was impossible. The vein-stone consists of quartz, iron oxides, and gossan, with traces of copper, and has a favorable appearance, for gold: talc and steatite occur in connection with the lode formation. A quartz vein about 120ft. in length, and having an extreme thickness of 3ft., lies 66ft. north-westerly from No. 2 shaft; it strikes W. 37° S., and appears to dip vertically. On the southern side, another vein strikes E. 11° N. for 150ft. These lode outcrops are worth further prospecting.

JOHN BULL CLAIMS.

Numerous shallow pits and a few shafts have been sunk here, in prospecting quartz and ironstone veins; these have a low dip southerly. The country rocks consist of mica slates and sandstone, twisted micaceous slates, limestone and micaceous limestone, striking from east to west to E. 10° N., and dipping vertically and inclined north and south, forming an anticlinal. The veinstone has a very favorable appearance for gold, and the locality is a likely one for surface gold.

THE SOUTH AUSTRALIAN BROKEN HILL.

At some old workings, known as the South Australian Broken Hill, there are shallow vertical and inclined shafts, which have been sunk on veinstone and lode formation consisting of laminated quartz, oxides of iron, gossan, and carbonate of iron; containing galena, carbonate of lead, and copper ore. The lode is small and irregular; it strikes east-north-easterly and dips southerly 45° . Three samples assayed returned—gold 19dwts. 14grs., silver 17ozs. 1dwt. 9grs.; gold 1dwt. 8grs., silver 6dwts. 20grs.; and gold 3dwts. 6grs., silver 1oz. 1dwt. 20grs. per ton. This lode was discovered in 1888 (prior to the finding of gold at Wadnaminga), and prospected for silver lead. Samples of ore (carbonate of lead) taken by me at the time, on assay returned silver at the rate of 36ozs. 11dwts., 42ozs., 8ozs. 10dwts., 8ozs., and 11ozs. respectively per ton, and a trace of gold. The silver-bearing ore seems to have run out in depth. The amount of prospecting done has been very small. It is possible the lode at greater depths may increase in size, and it is therefore worth prospecting further.

OLD WORKINGS SOUTH OF GOLD SECTION 261.

There is a strong lode outcrop of hematite, limonite, quartz, and other siliceous veinstone here; it strikes east 10° to 15° north, and dips south at 70° . The thickness varies from 2ft. to 4ft. Samples assayed returned a trace of gold only. Deeper prospecting is required.

KLEM'S CLAIMS.

Klem's Claims are situated on a range trending north-easterly and south-westerly across the north-west corner of the goldfield reserve (see map). The rocks of this range consist of a slate and limestone conglomerate, argillaceous and calcareous slate, mica slates, clay and micaceous slates, through which are scattered boulders and pebbles of granite, quartzite, slate, limestone, and other rocks. The boulders are sometimes very large, attaining a weight of at least half a ton. A red dolomitic limestone is interstratified in places along the range; it also contains similar boulders and pebbles to those in the slate. The strata have a strike of about E. 30° N., and dip vertically, and inclined in both northerly and southerly directions. Shafts have been sunk on a siliceous, calcareous, and ferruginous formation, containing carbonate of iron, quartz, and galena. The galena appears to have been found only in small quantities scattered throughout the formation, and does not occur in sufficient quantities to induce the expenditure of capital in prospecting deeper. An assay of the galena returned—gold, a trace; silver at the rate of 19ozs. 5dwts. 11grs. per ton.

THE NORTH-EASTERN SYNDICATE.

(Leopold and Lillywhite.)

A lode of siliceous, calcareous, and ferruginous veinstone, associated with quartz, carbonate of iron, and iron oxides and pyrites is being prospected here. It strikes N. 10° W., and dips east 76°. The thickness varies from 1ft. to 2ft., and it has been sunk on for 40ft. It is a well-defined vein, and resembles in composition the large indicator vein at the Countess of Jersey. Some of the stone has probably been treated since my visit, but no returns of gold obtained are available. A sample of the pyrites assayed—gold, a trace; and silver, 4dwts. 21grs. per ton.

SMITH'S SILVER-LEAD LOCALITY.

This is situated near the Gorge (*see* general map). A vein of quartz, containing carbonate of lead in small percentage, dips at a low angle northward into the hill. It is small, and appears not likely to increase in size if followed down. A vein of brown iron ore in the same vicinity strikes east and west, and dips north. A sample taken from this vein assayed—gold 14dwts., silver 8dwts. per ton. The locality is a likely one for surface gold.

REDUCING MACHINERY, BATTERIES, ETC.

There are two batteries on the field, viz.:—The New Milo battery of ten stamps, with cyanide vats, &c., and the Countess of Jersey, of ten stamps, with berdan pans.

The New Milo battery is situated on gold section 225. The tailings collected during the time it has been at work are now being treated by the cyanide process. Water for crushing purposes is pumped from a well half a mile south-west of the battery. Water is also procured from the mine for that purpose.

The Countess of Jersey battery, situated about three quarters of a mile westerly from the township, has not been at work for some years. An excavated dam and a well have been sunk to provide water for crushing; these are still in good order, and water is obtainable from the latter.

The Virginia battery, which was erected on gold section 207, has been removed.

ALLUVIAL DIGGINGS.

Gold has been obtained from alluvial gullies and surfacing at several places along the Eiffel Tower and Victoria Tower group of lodes, viz., on gold sections 153, 156, 221, 236, 243, 248, 261, 262, 265, 266, and westward along the same range of hills. Except where the gullies are narrow and well defined, it has only been found in small and not payable quantities. This is doubtless owing to the wide extent of the alluvial flats and plains rendering it a difficult matter for prospectors to locate and follow the "runs" of gold which there is every reason to infer exist beneath them.

GENERAL GEOLOGY.

The Wadnaminga Goldfield Reserve comprises an area of thirty-six square miles. It is crossed in a north-easterly and south-westerly direction by three main ridges of elevated country, and partially by two other detached ranges. These are intersected by creeks trending from N.E. to S.W., into wide alluvial flats. The highest elevation of the hills forming these ranges is from 300ft. to 350ft., the general average height being about 200ft. The strike of the rocks conforms roughly to that of the ranges. In the north-western corner of the reserve the rocks consist of mica slates and sandstones, clay slates, calcareous clay slates and flags, and limestones, striking from E. 30° N. and W. 30° S. to north-easterly and south-westerly, and dipping vertically and southward. The lowest beds are the most micaceous. The limestone, which is crystalline and dolomitic, is interstratified in beds of irregular thickness. The slates and flags, as well as the limestone in this vicinity, contain scattered boulders and pebbles of various varieties of granite, quartzite, sandstone, slate, limestone, and other rocks, sometimes forming a true conglomerate. Some of these boulders are very large, and, judging from their size and mode of occurrence, have probably been transported by ice action at an early period in geological history.

The country-rocks in which the two main groups of auriferous lodes occur have already been described in connection with these groups. In the south-western portion of the reserve there are extensive beds of sandstone, calcareous sandstone, and quartzose sandstone, interstratified with clay slates and calcareous slates, limestone, micaceous slates, and sandstones, which have been thrown into an anticlinal arch, trending north-easterly and south-westerly. In the south-eastern corner of the reserve calcareous sandstone beds are interstratified with mica slates and beds of limestone; they strike north-easterly and south-westerly, and dip south-easterly at angles of 45° . Further to the south-west similar beds strike W. 20° S. and dip vertically and at high angles in a northerly direction.

SUMMARY.

The number of auriferous quartz lodes on the Wadnaminga Goldfield so far opened is large; as a general rule, although small in size, they are persistent in dip and strike, and have well-defined walls. So far as followed down they have in no instance been found to die out; in some cases they have thinned out considerably, but this thinning out may be, and most probably is, only a temporary falling off in thickness, and should not discourage prospecting at greater depths. The auriferous specimens found from time to time in many of these lodes have been unusually rich and are sufficiently encouraging to warrant more energetic and systematic prospecting and mining.

With the exception of the New Milo and Virginia, none of the mines hitherto opened up can be said to have been systematically worked.

H. Y. L. BROWN,

June 10th, 1898.

Government Geologist.

No. 1.
GEOLOGICAL
OF THE
REGION

Scale—2 inches to 1

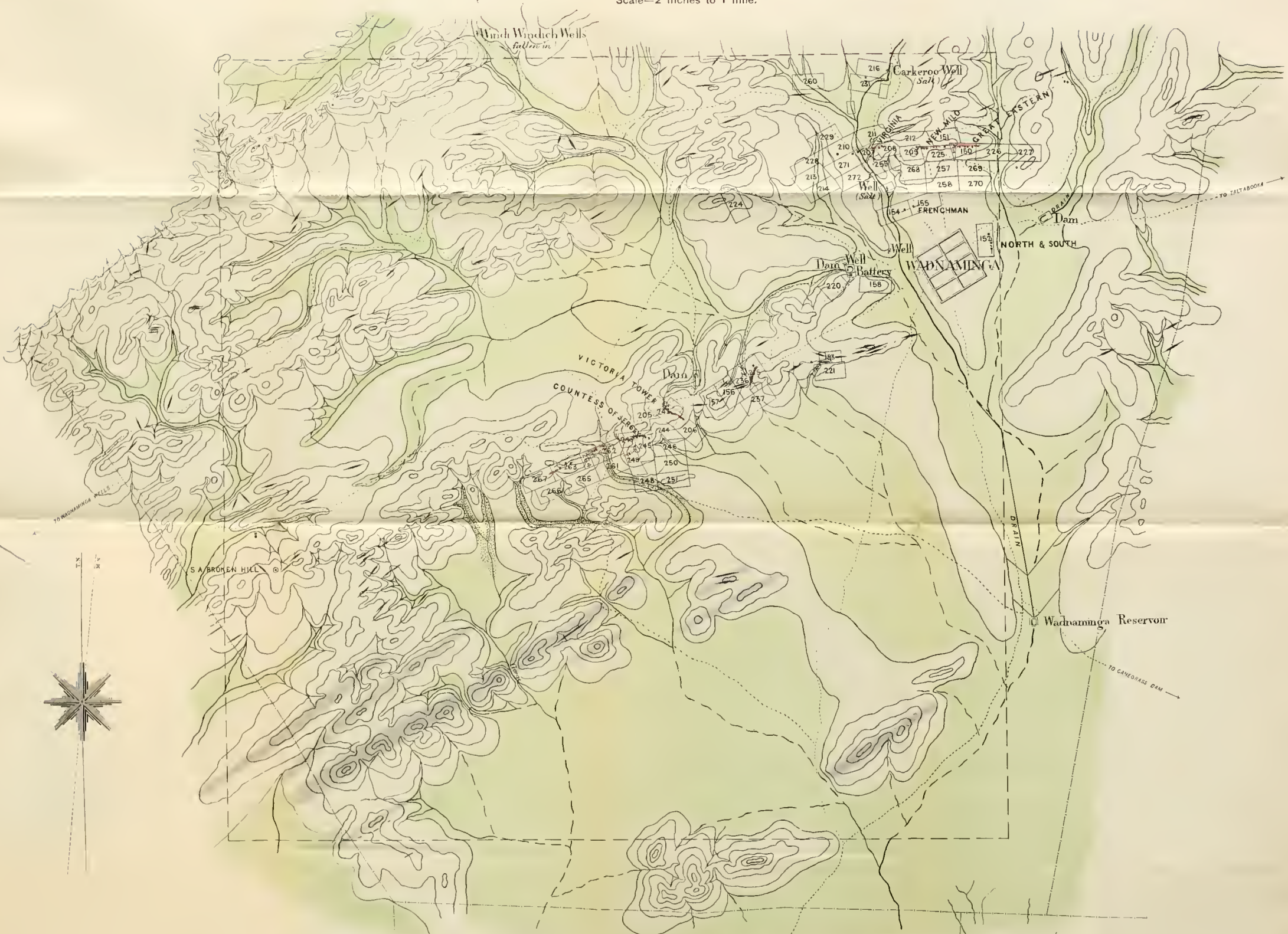


H. Y. L. BROWN,

Government Geologist.

No. 1.
GEOLOGICAL MAP
 OF THE
WADNAMINGA GOLD-FIELD

Scale—2 inches to 1 mile.



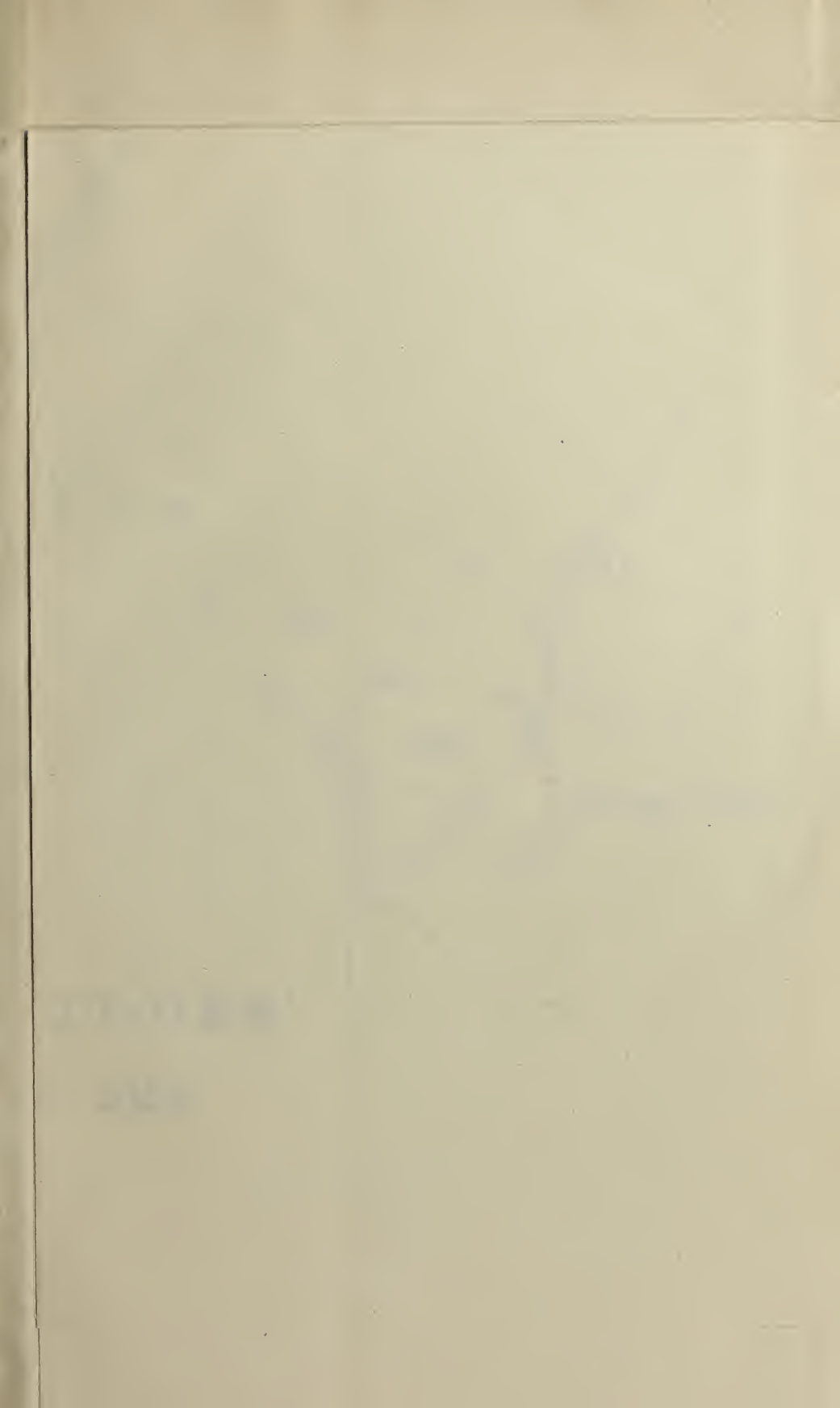
INDEX TO COLORS.

Post Pliocene.	Sand, Clay Loam, Gravel and Conglomerate.
Lower Silurian?	Argillaceous, Micaceous and Calcareous Slates, Flags and Sandstones, Limestone, Dolomitic, Micaceous and Argillaceous Limestones, Mic. Slate, Claystone etc.
or Cambrian.	Quartzose Sandstone, Sandstone and Calcareous Sandstone

REFERENCE.

- Quartz Lodes, proved Auriferous.
- Quartz Lodes.
- Alluvial Diggings.
- Shafts and Workings.
- Dips of Lodes.
- Contour Lines, 50 ft. apart.

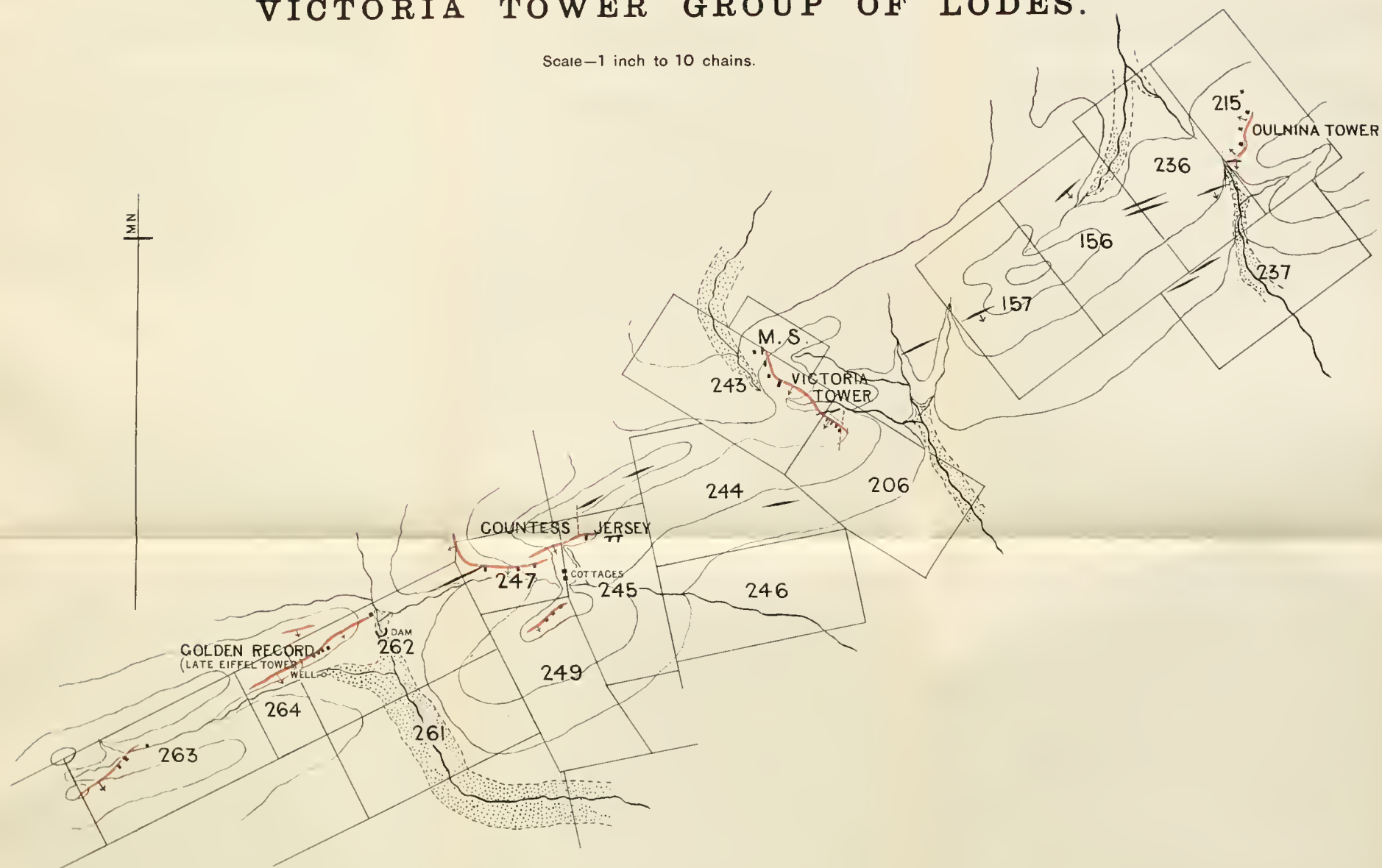
H. Y. L. BROWN,
 Government Geologist.



No. 2.

ENLARGED PLAN OF GOLD SECTIONS ON THE VICTORIA TOWER GROUP OF LODES.

Scale—1 inch to 10 chains.



REFERENCE

- Quartz lodes proved auriferous
- Quartz lodes
- - - Indicator veins
- Alluvial diggings
- • • Shafts and workings
- ↓ Dip of lodes
- Contour lines 50 feet apart

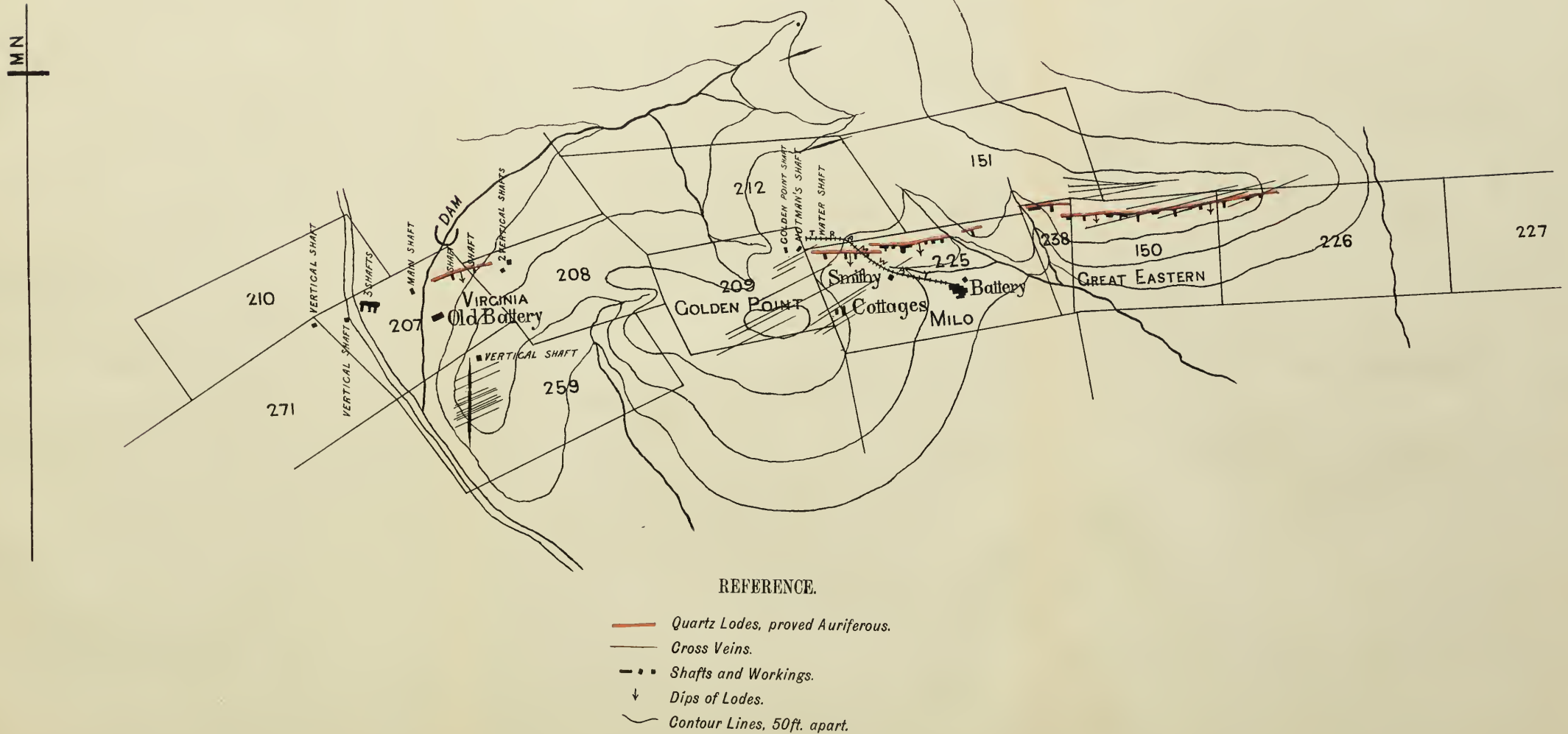
OF LODES.



No. 3.

ENLARGED PLAN OF GOLD SECTIONS ON THE
GREAT EASTERN, NEW MILO, AND VIRGINIA GROUP OF LODES.

Scale—1 inch to 10 chains.



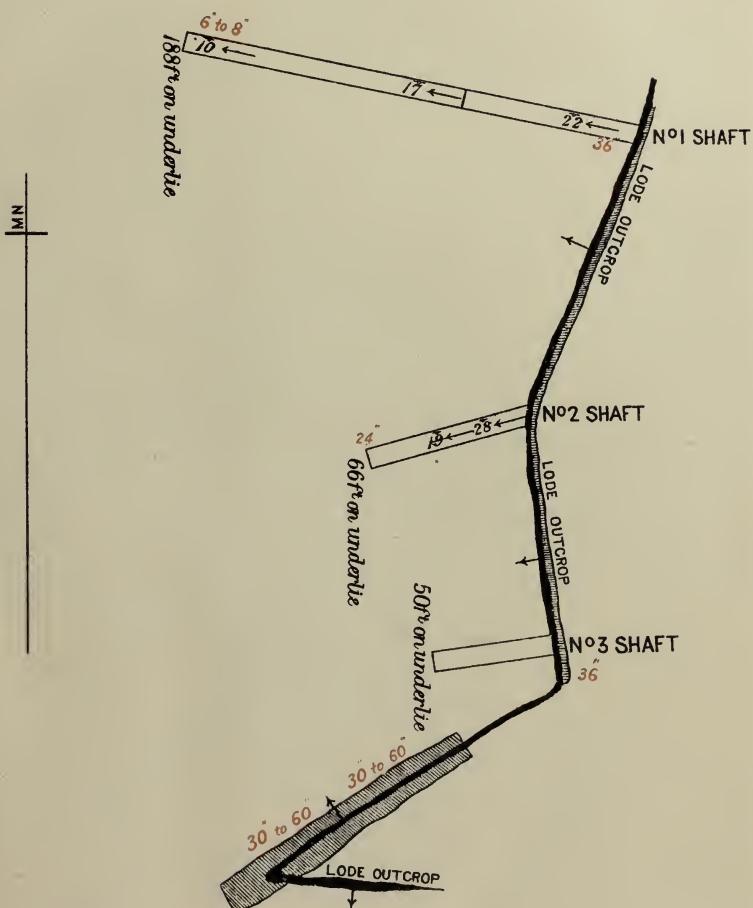
No. 4.

OULNINA TOWER MINE.

▣ VERTICAL SHAFT

Plan of Workings.

Scale—1 inch to 80 feet.



REFERENCE.

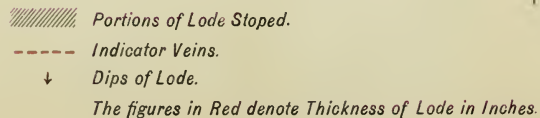
▨ Portions of Lode Stopped.

↓ Dips of Lode.

Figures in Red denote Thickness of Lode in Inches.



LODE

Scale—1 inch to 80 feet.



MIN

=====

 P_c
 I_n
 F_i

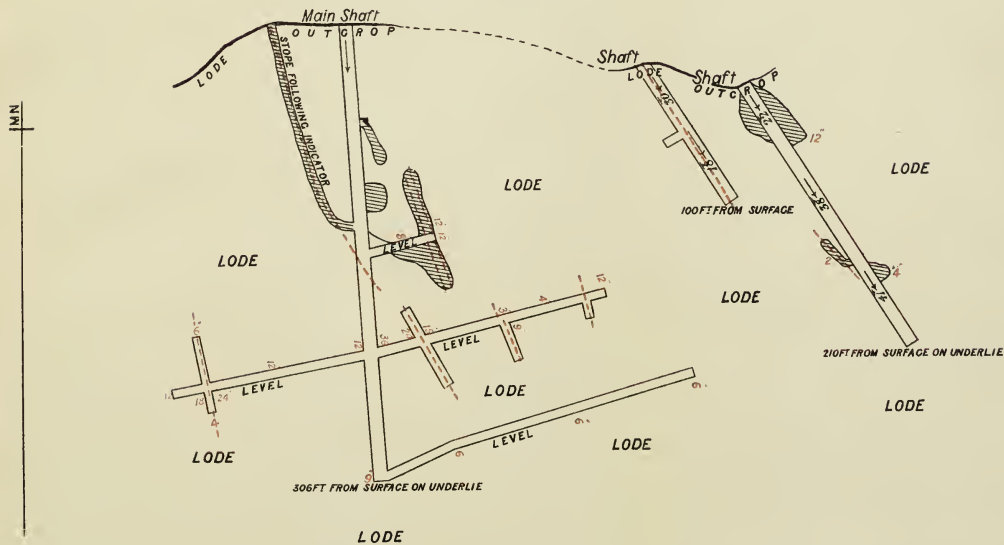
rl

No. 6.

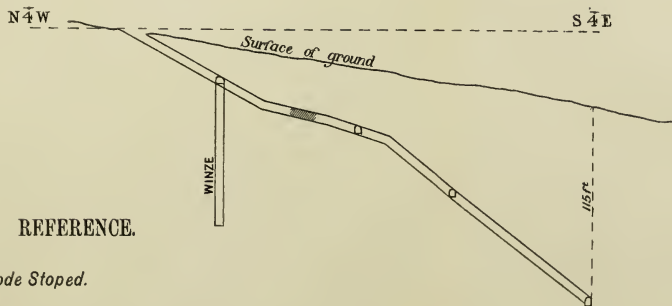
COUNTESS OF JERSEY MINE.

Plan of Workings and Section through Main Shaft.


Scale—1 inch to 80 feet.



SECTION THROUGH MAIN SHAFT



REFERENCE.

 Portions of Lode Stopped.

 Indicator Veins.

Figures in Red denote Thickness of Lode in Inches.

Scale—1 inch to 80 feet.

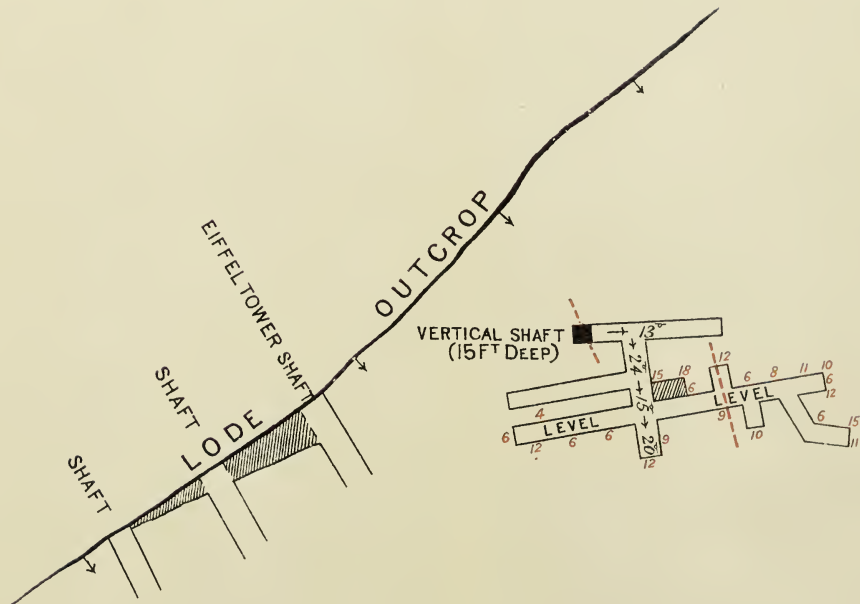
REFERENCE.

—
|MN

No. 8.
GOLDEN RECORD MINE.
(LATE EIFFEL TOWER.)

Plan of Workings.

Scale—1 inch to 40 feet.



REFERENCE.

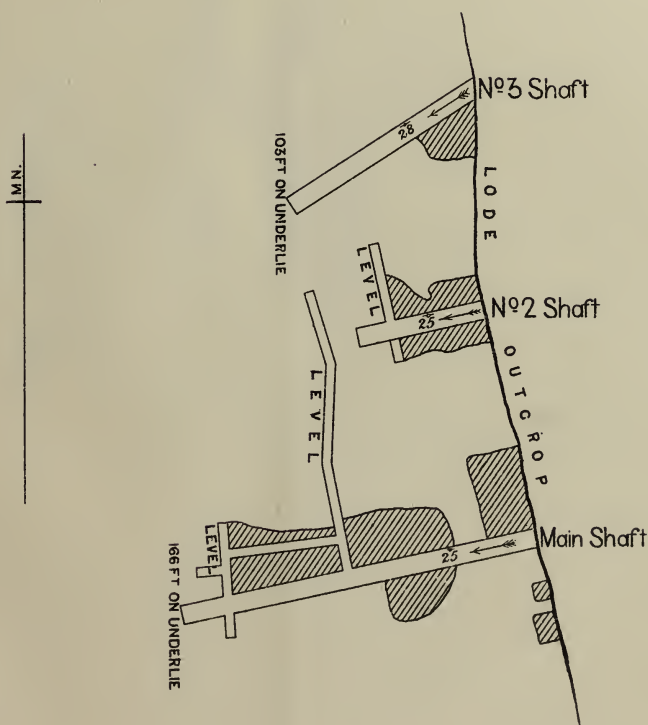
Portions of Lode Stopped.

Dips of Lode.

Indicator Veins.

Figures in Red denote Thickness of Lode in Inches.

Plan of Workings.

[illegible]

Portions of Lode Stopped.

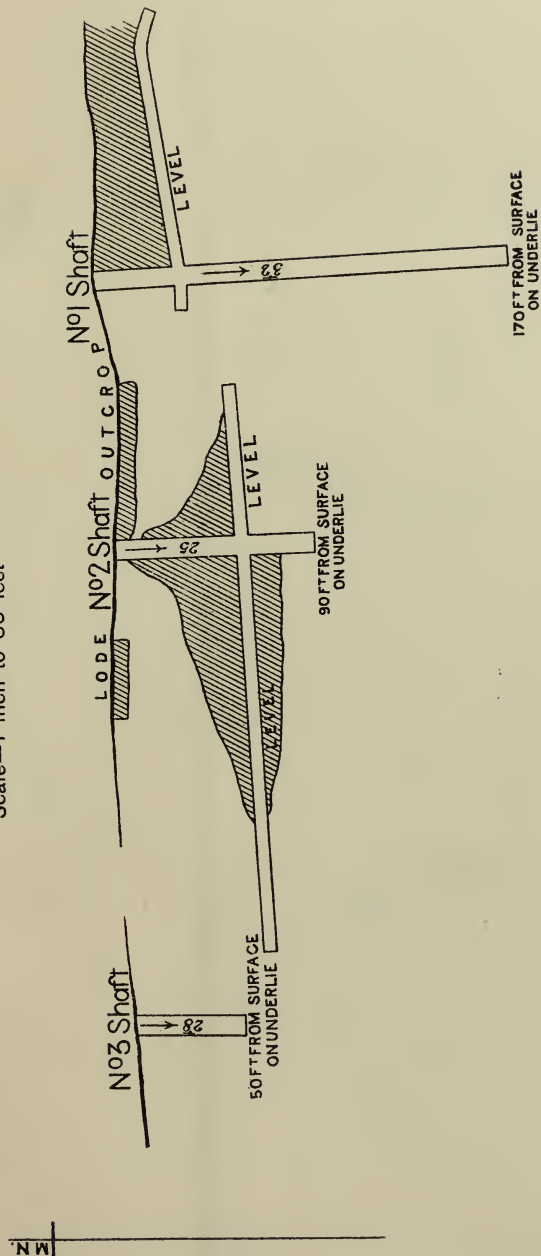
↓ *Dips of Lode.*

No. 10.

GREAT EASTERN MINE.

Plan of Workings.

Scale—1 inch to 80 feet



REFERENCE.

Portions of Lode Stopped.

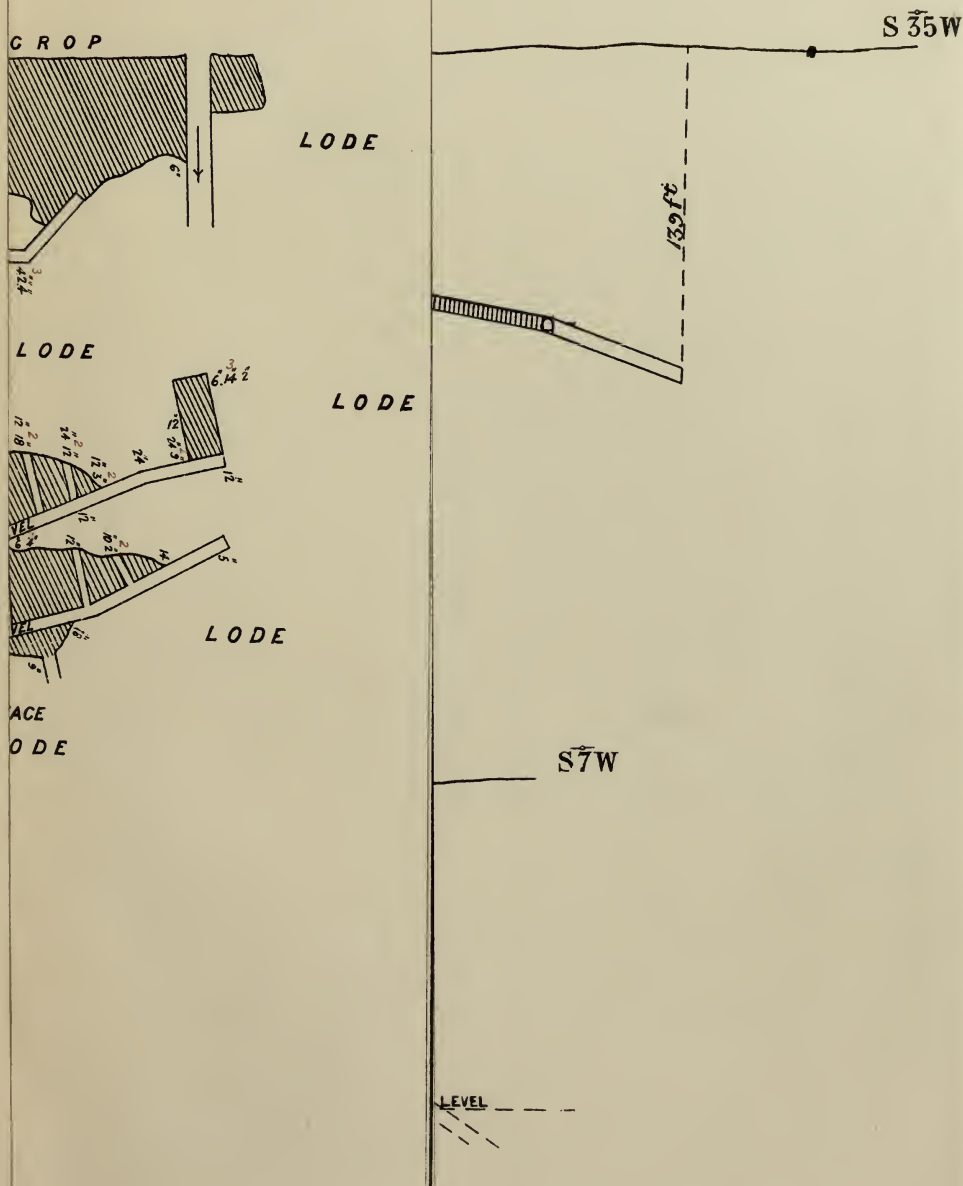
↓ Dip of Lode.

No. 11.

MILO MINE.

through Nutman's Shaft

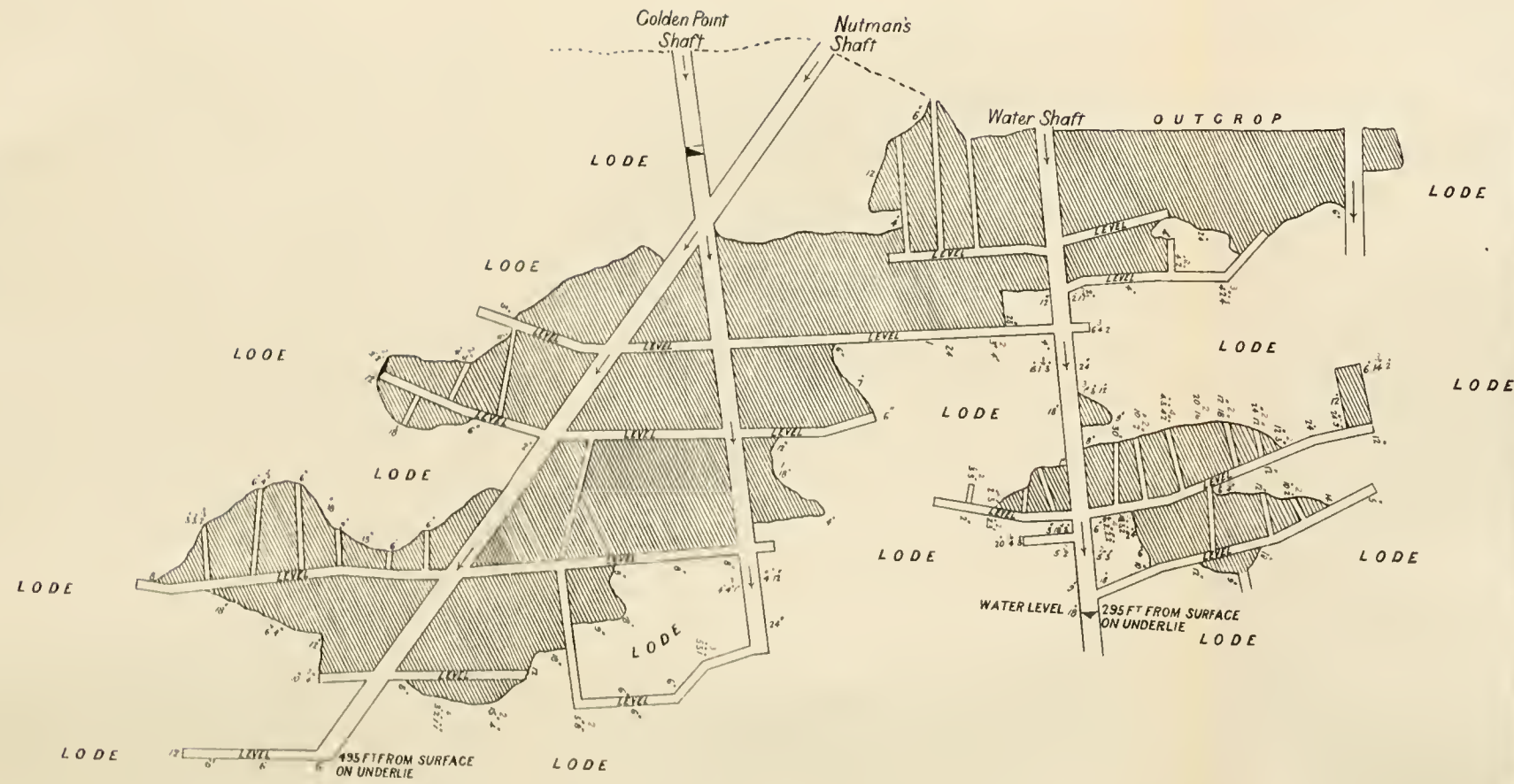
Scale—1 inch to 80 feet.



NEW MILO MINE.

Plan of Workings and Section through Nutman's Shaft and Water Shaft.

Scale—1 inch to 80 feet



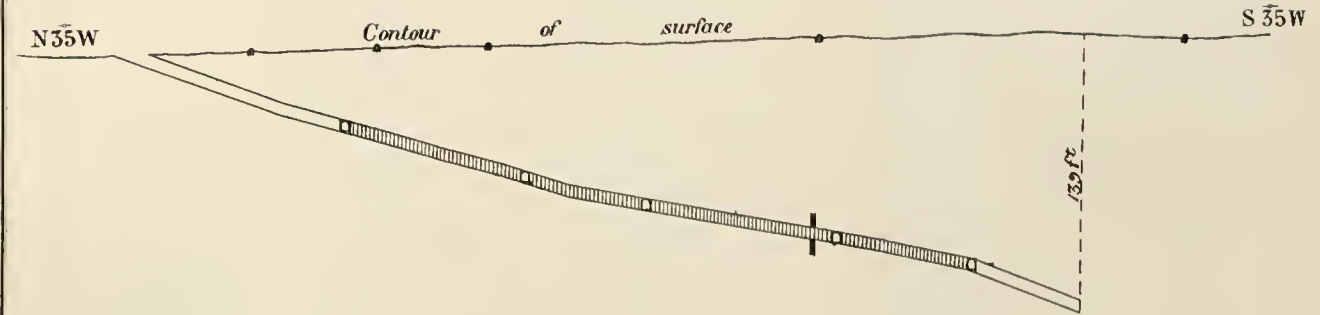
REFERENCE.

||||| Portions of Lode Stopped.

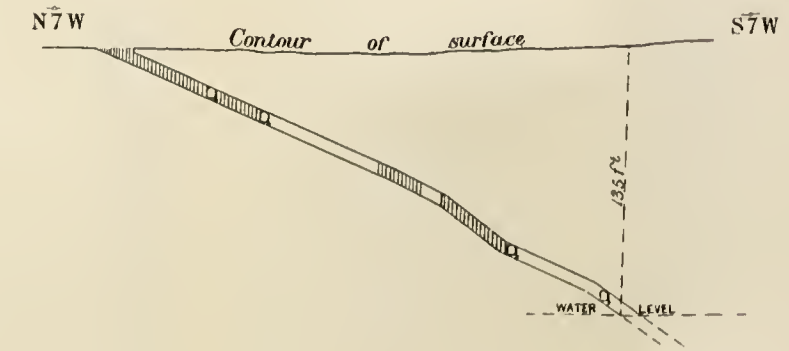
↓ Dips of Lodes.

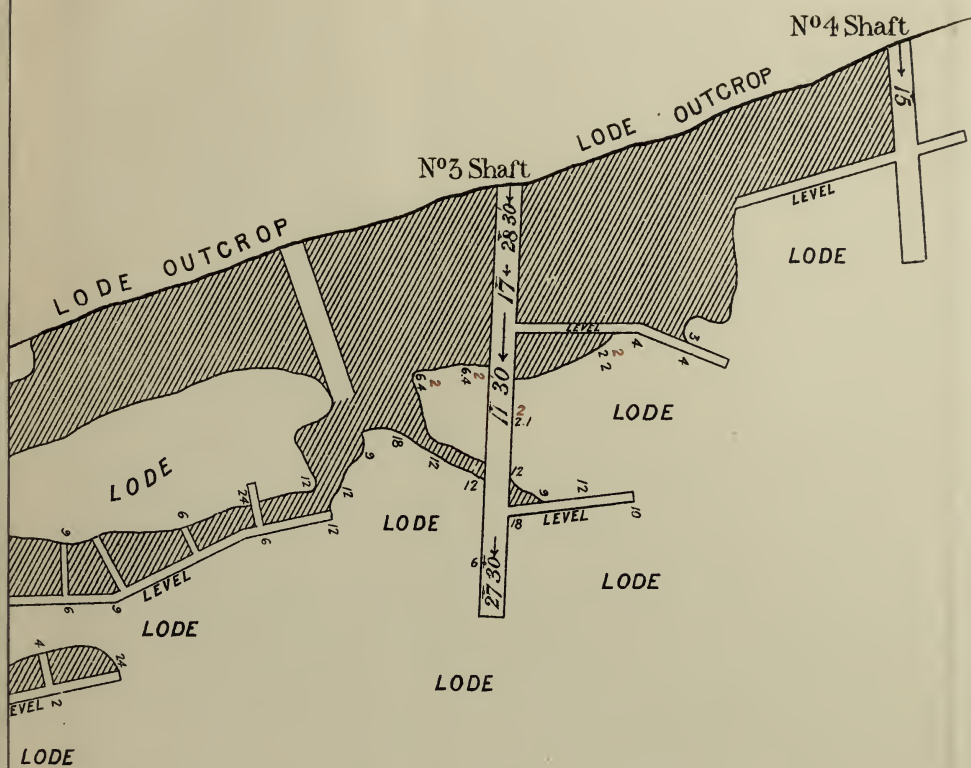
The figures in Red denote the number of veins in the lode when divided; those in black the thickness of the veins in inches

SECTION THROUGH NUTMAN'S SHAFT



SECTION THROUGH WATER SHAFT

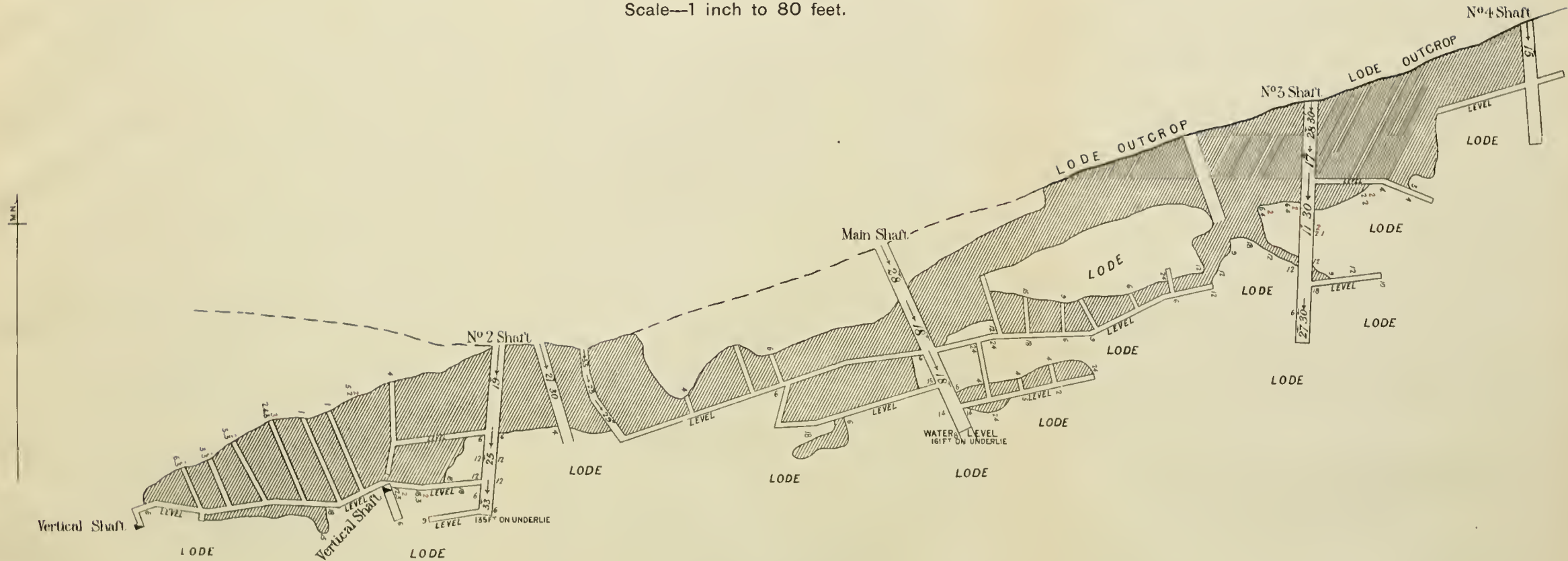




No. 12. VIRGINIA MINE.

Plan of Workings.

Scale—1 inch to 80 feet.



REFERENCE.

////// Portions of Lode Stopped.

↓ Dips of Lodes.

The figures in Red denote the number of veins in the lode when divided; those in black the thickness of the veins.



